



New Cassel/Hicksville Ground Water Contamination Superfund Site

Proposed Cleanup Plan

**Public Meeting
Thursday, August 15, 2013**



Project Team	
Cecilia Echols	U.S. Environmental Protection Agency (EPA) Community Involvement Coordinator
Pete Mannino	EPA Western New York Remediation Section Chief
Jennifer LaPoma	EPA Project Manager
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Jacqueline Nealon	New York State Department of Health



Meeting Agenda

- Superfund Overview
- Background
- Remedial Investigation
- Assessment of Risk
- Remedial Alternatives
- Preferred Cleanup Plan
- Questions



Superfund Law

- Toxic waste disposal disasters prompted law passage by Congress in 1980 and amended in 1986.
- Provides Federal funds for cleanup of hazardous waste sites.
- Allows EPA to respond to emergencies involving hazardous substances.
- Empowers EPA to compel potentially responsible parties to pay for or conduct the clean up.



Superfund Cleanup Process

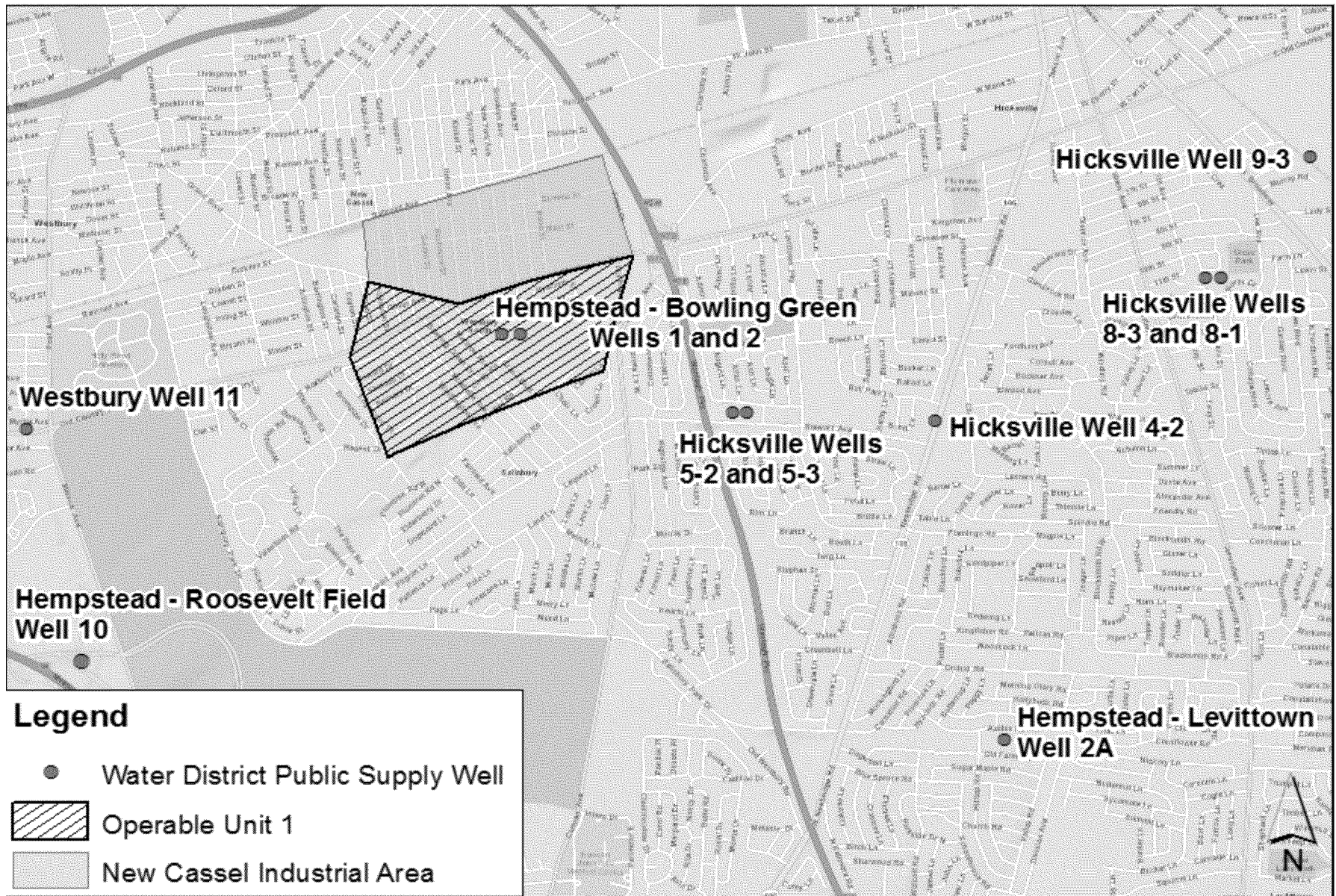
- Site Discovery and Hazard Ranking System (HRS)
- Preliminary Assessment/Site Inspection (PA/SI)
- Site Placed on National Priorities List (NPL)
- Remedial Investigation/Feasibility Study (RI/FS)
- Proposed Plan for Cleanup
- Record of Decision (ROD)
- Remedial Design/Remedial Action (RD/RA)
- Long Term Monitoring/Five Year Review of Cleanup
- Deletion of Site from NPL



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New Cassel/Hicksville Ground Water Contamination Superfund Site





Legend

 **OU1**

 **Bowling Green Wells**

Base Map from ESRI Map Services

ED_001164_00024489-00008



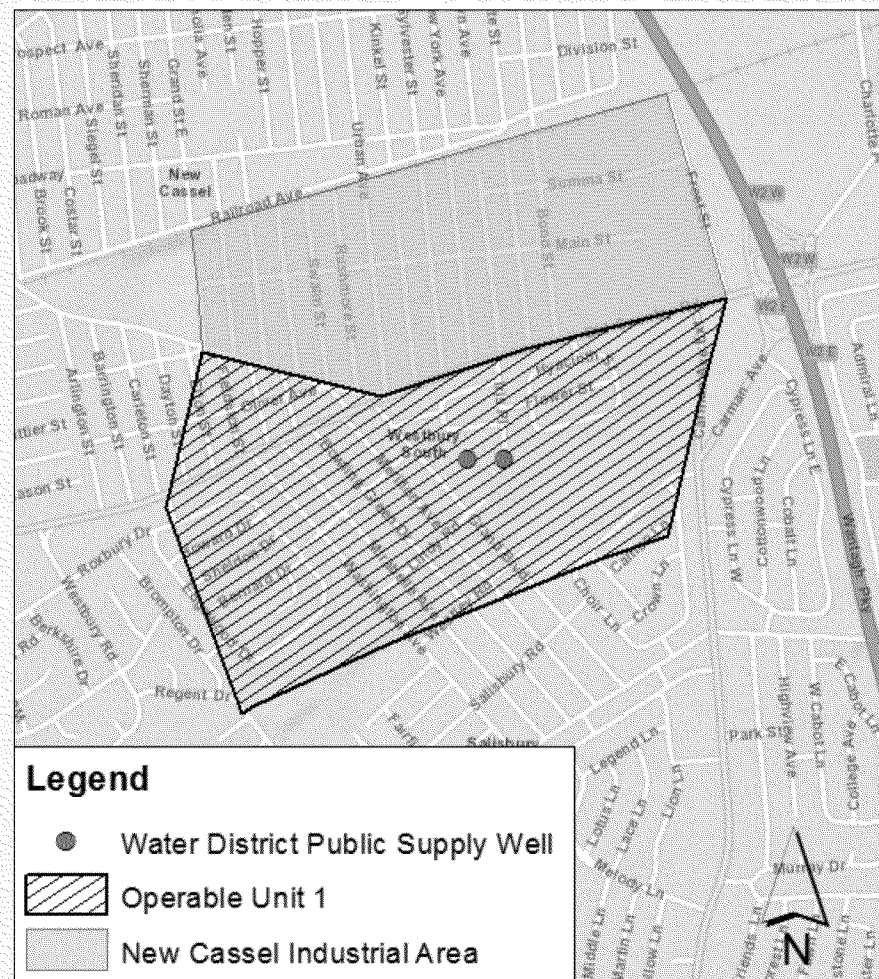
History

1986 Nassau County Dept. of Health investigation

1990 Treatment system installed at Bowling Green supply wells.
Upgraded in 1995

1994 to 1999 New York State Dept. of Environmental Conservation (NYSDEC) assessments of facilities within New Cassel Industrial Area

1995 to 1999 NYSDEC listed 17 facilities on Registry of Inactive Hazardous Waste Sites (NYS Superfund)





History

1999 to 2000

NYSDEC Remedial Investigation and Feasibility Study (RI/FS) for "Off-site Groundwater South of the New Cassel Industrial Area."

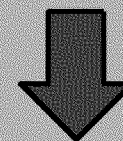
2003

NYSDEC Record Of Decision (ROD) selected the following remedy:

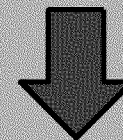
- In-well vapor stripping/localized vapor treatment to 225 feet below ground surface
- A contingency plan to use extraction and treatment (pump and treat)

NYSDEC Timeline **for Groundwater** **South of NCIA**

1994 to 1999
NYSDEC investigated
NCIA



1999 to 2000
NYSDEC RI/FS



2003
NYSDEC
Selects remedy



History

2009

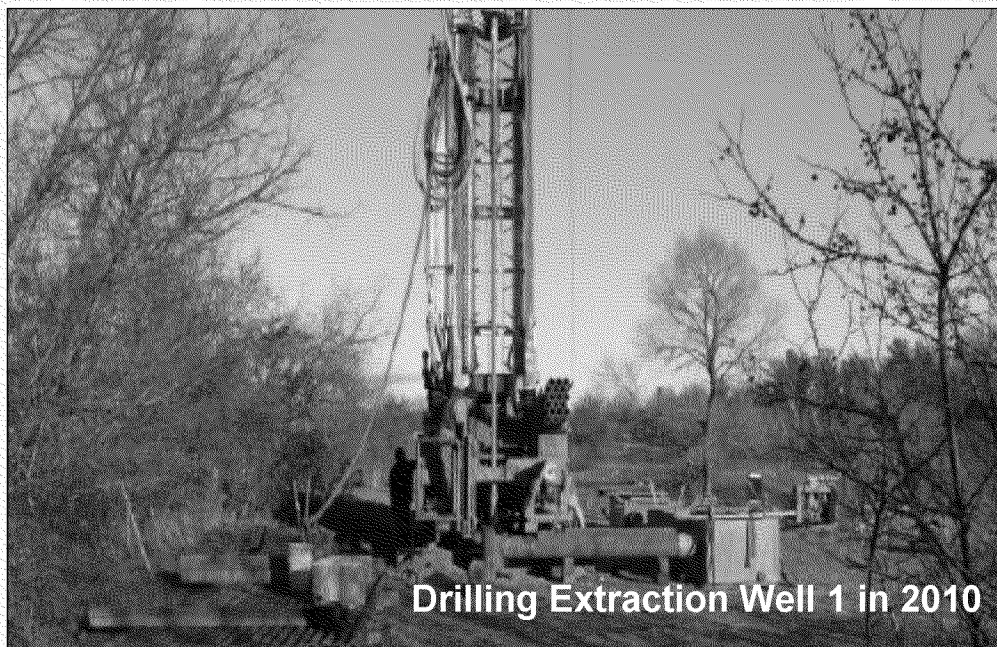
NYSDEC's
First Pre-Design
Investigation completed

- In-well Vapor Stripping

2011

NYSDEC's
Second Pre-Design
Investigation completed

- Extraction and
Treatment



Source: NYSDEC's 2011 NCIA OU3 PDI. HDR

December 27, 2010: New York State requested
EPA list the Site to the NPL.

September 16, 2011: EPA listed the Site on the
NPL.



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EPA's Supplemental Remedial Investigation of the Site

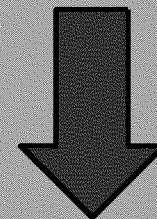
Purpose of Remedial Investigation (RI):
to determine the nature and extent of
contamination

- Review and summarize available groundwater data and response activities overseen by NYSDEC.
 - Included OU1
- Provide recommendations for future activities.

EPA Timeline

**September
16, 2011**

EPA adds Site
to NPL



Fall 2011

EPA starts
Supplemental
RI for Site

Site Geology and Hydrogeology

Upper Glacial Aquifer

- Approximately 40 to 65 feet thick
- Coarse grained sands and gravel

Magothy Aquifer

- Approximately 600 feet thick
- Sand, silty sand, and discontinuous clay silt layers

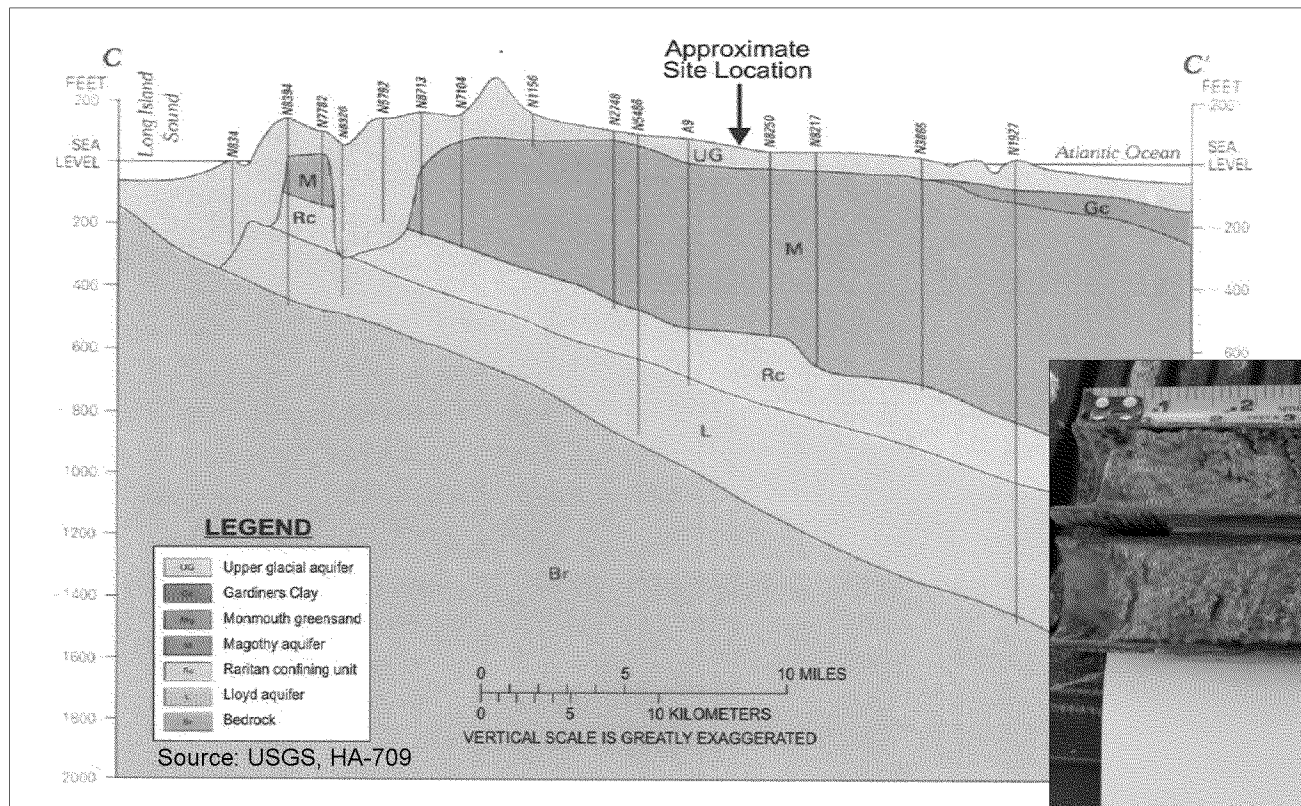
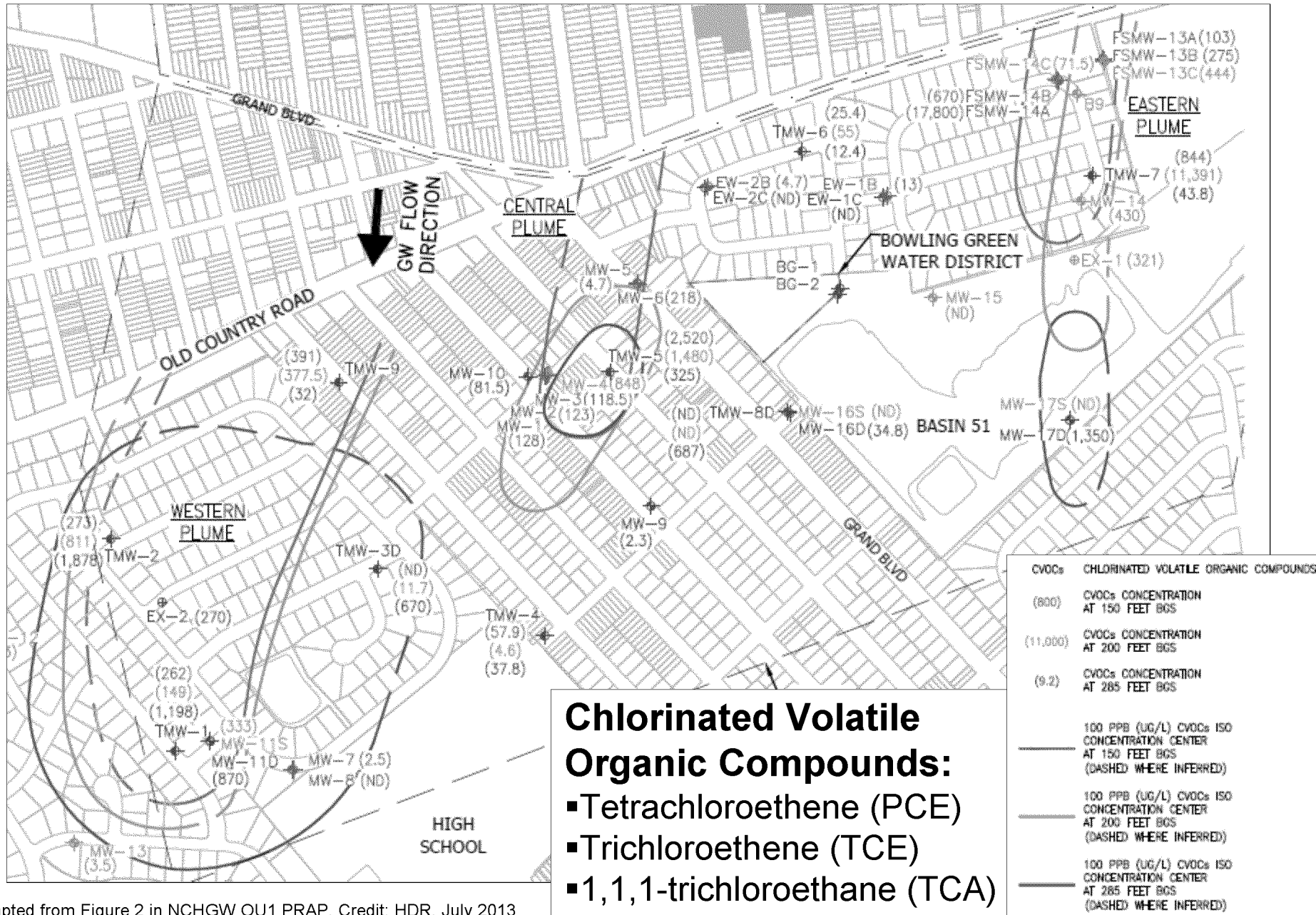


Photo Source: NYSDEC's 2011 NCIA OC3 PDF HDR

Current Nature and Extent of Contamination



Adapted from Figure 2 in NCHGW OU1 PRAP. Credit: HDR, July 2013



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EPA's OU1 Human Health Risk Assessment

- A human health risk assessment was conducted to estimate **current** and **future** effects of contaminants on human health in the absence of any action to control or mitigate these exposures.
- Carcinogenic and non-carcinogenic health effects that could result from exposure to contaminated groundwater through ingestion, dermal contact and inhalation of vapors (while showering/bathing) were quantified for OU1.



Chemicals of Potential Concern	Maximum Concentration Detected (µg/L)	New York Water Quality Standard (µg/L)	Federal Safe Drinking Water Act Standard (µg/L)
Tetrachloroethene (PCE)	16,000	5	5
Trichloroethene (TCE)	5,100	5	5
1,1,1-Trichloroethane (TCA)	1,400	5	200

Full list of 15 Chemicals of Potential Concern can be found within the Proposed Plan and/or Human Health Risk Assessment



EPA's OU1 Human Health Risk Assessment

Results of the risk assessment indicated:

Current exposure: No unacceptable risk or hazard

Future potential: Risks exceed EPA's target risk range and non carcinogenic hazard threshold for the following receptors:

- Future residents (adult/children combined lifetime)
- Future Site worker



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EPA's Supplemental Feasibility Study for OU1

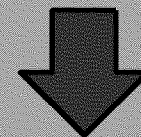
Purpose of Feasibility Study (FS):

To identify remedial alternatives, based on site-specific conditions and sampling results, that will eliminate, reduce or control unacceptable risks to human health.

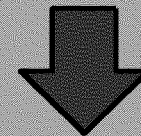
EPA Timeline

**September 16,
2011**

EPA adds Site to
NPL



Fall 2011
EPA starts
Supplemental RI
for Site



Fall 2012
EPA starts
Supplemental FS
for OU1



Remedial Action Objectives for OU1

- **Prevent or minimize current and potential future human exposure** (via ingestion and dermal contact) to volatile organic compounds in groundwater at concentrations in excess of federal and State standards;
- **Minimize the potential for further migration** of groundwater with volatile organic compound contaminant concentrations greater than federal and State standards;
- **Restore the impacted aquifer to its most beneficial use** as a source of drinking water by reducing contaminant levels to the federal and State standards.



Remedial Alternatives – Cleanup Options

Alternative #1 – No Further Action

Alternative #2 – Monitored Natural Attenuation (MNA)

Alternative #3 – In-Well Vapor Stripping; In-situ Chemical Treatment

Alternative #4 – Extraction and Treatment; In-situ Chemical Treatment

Alternative # 5 – Hybrid - In-Well Vapor Stripping and Extraction and Treatment; In-situ Chemical Treatment



Alternative #1 - No Further Action

- National Contingency Plan requires a “No Action” alternative is evaluated
- Alternative 1 does not involve any physical remedial actions, monitoring, or institutional controls
- Five Year Review



Alternative # 2- Monitored Natural Attenuation

- Groundwater contaminated with volatile organic compounds can be remediated by chemical, biological or physical natural attenuation processes.
- Monitored Natural Attenuation can decrease the concentration of contaminants in the aquifer by some of the following:
 - Dispersion.
 - Dilution within cleaner groundwater.
 - Degradation to other volatile organic compounds .



Common Elements of Alternatives 3, 4, and 5

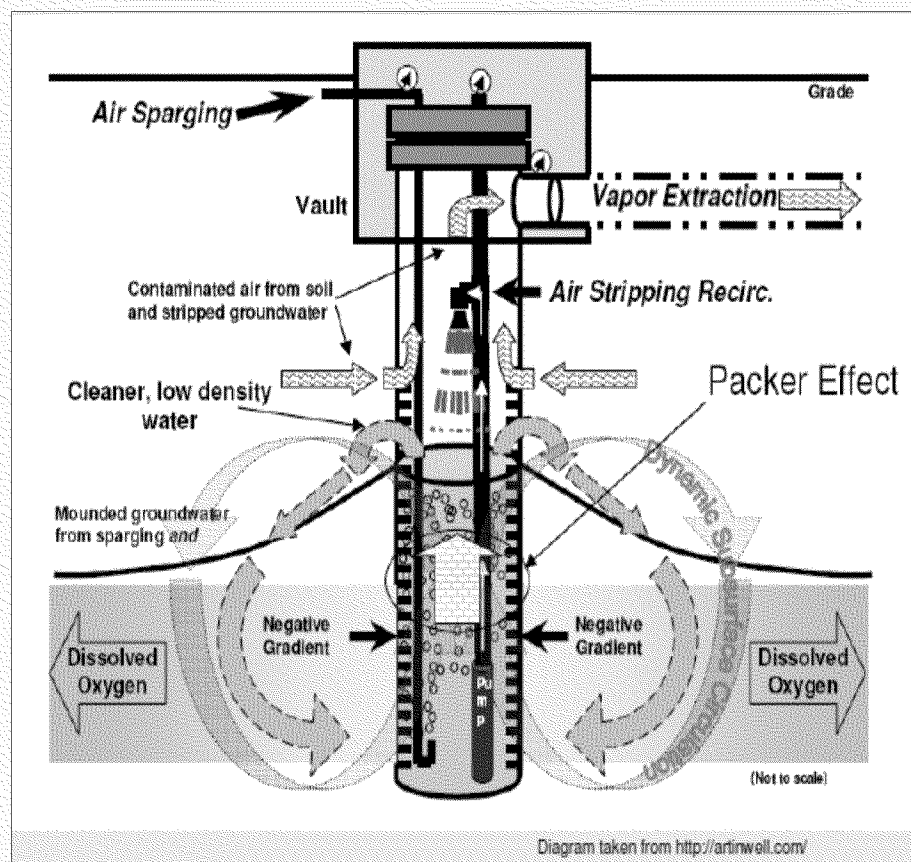
In addition to the **common elements** of long-term monitoring, **institutional controls** and a **five year review**, Alternatives 3, 4, and 5 also include:

Use of In-situ Chemical Treatment

- To target areas containing high concentrations
- Such as in-situ chemical oxidation
Process where reactive chemicals are injected into subsurface for rapid destruction of contaminants into non-toxic byproducts
- A study would be performed prior implementation



Alternative #3 – In-Well Vapor Stripping; In-Situ Chemical Treatment



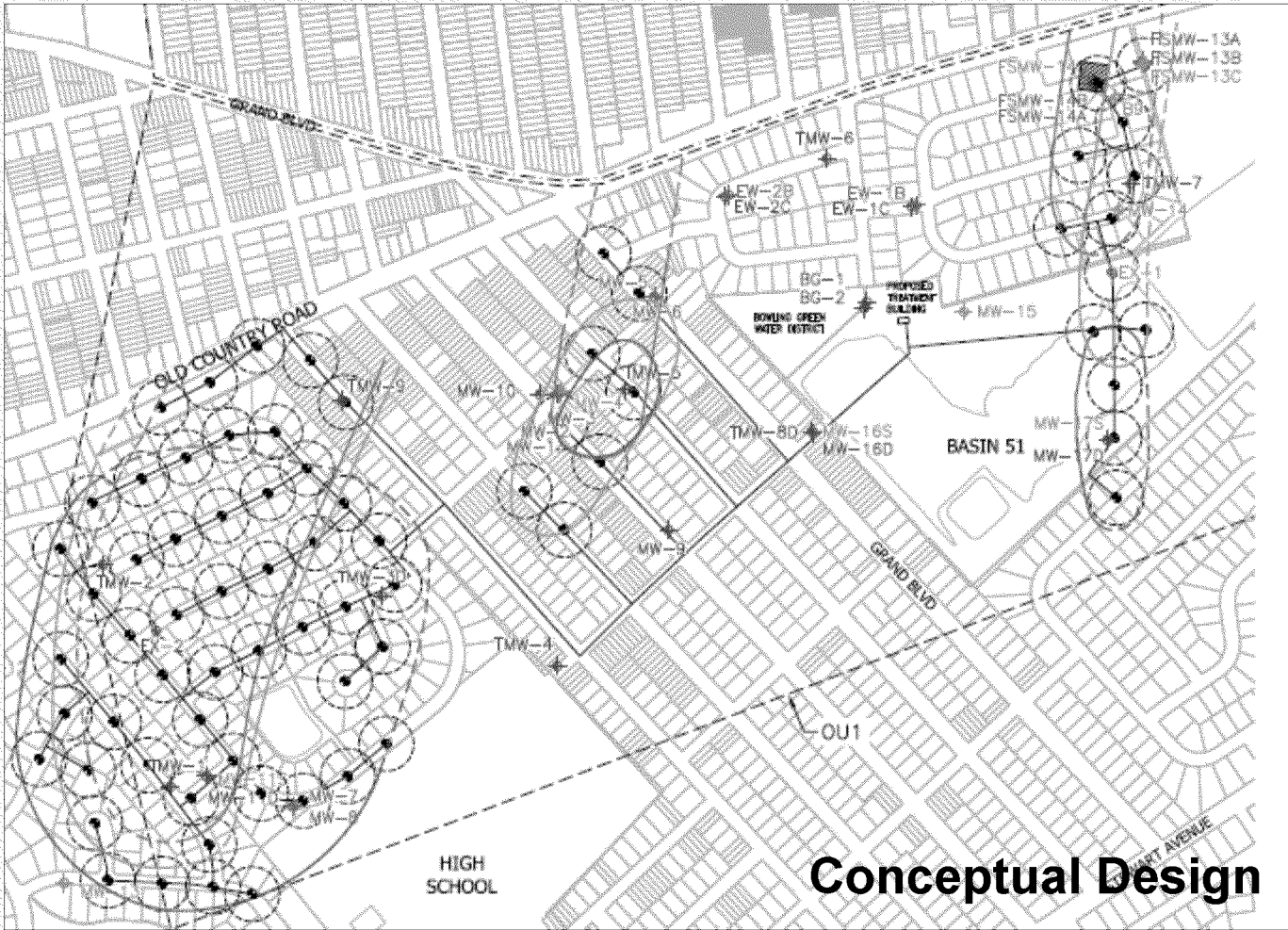
- In-well vapor stripping systems at various depths
- Treatment of vapor-phase contamination at an on-Site treatment plant
- In-situ chemical treatment



Alternative # 3 – In-well Vapor Stripping; In-situ Chemical Treatment

Legend

- < 175 FEET BGS
- 175 – 250 FEET BGS
- > 250 FEET BGS
- CVOCs CHLORINATED VOLATILE ORGANIC COMPOUNDS
- 100 PPB (UG/L) CVOCs ISO CONCENTRATION CENTER AT 150 FEET BGS (DASHED WHERE INFERRED)
- 100 PPB (UG/L) CVOCs ISO CONCENTRATION CENTER AT 200 FEET BGS (DASHED WHERE INFERRED)
- 100 PPB (UG/L) CVOCs ISO CONCENTRATION CENTER AT 285 FEET BGS (DASHED WHERE INFERRED)
- PROPOSED AIR LINE
- PROPOSED TREATMENT BUILDING
- PROPOSED IN-WELL VAPOR STRIPPING WELL
- PROPOSED AREA FOR ISCO





Alternative # 4 – Extraction and Treatment; In-situ Chemical Treatment

Extraction Well 2

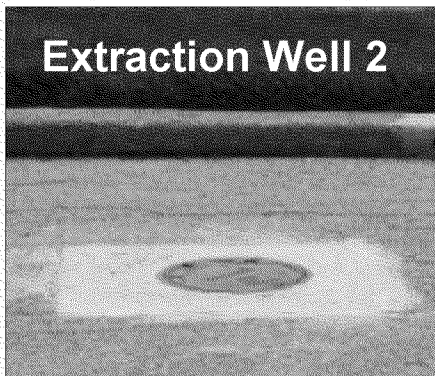


Photo Source: NYSDEC, 2011
NCIA OU3 PDI, HDR

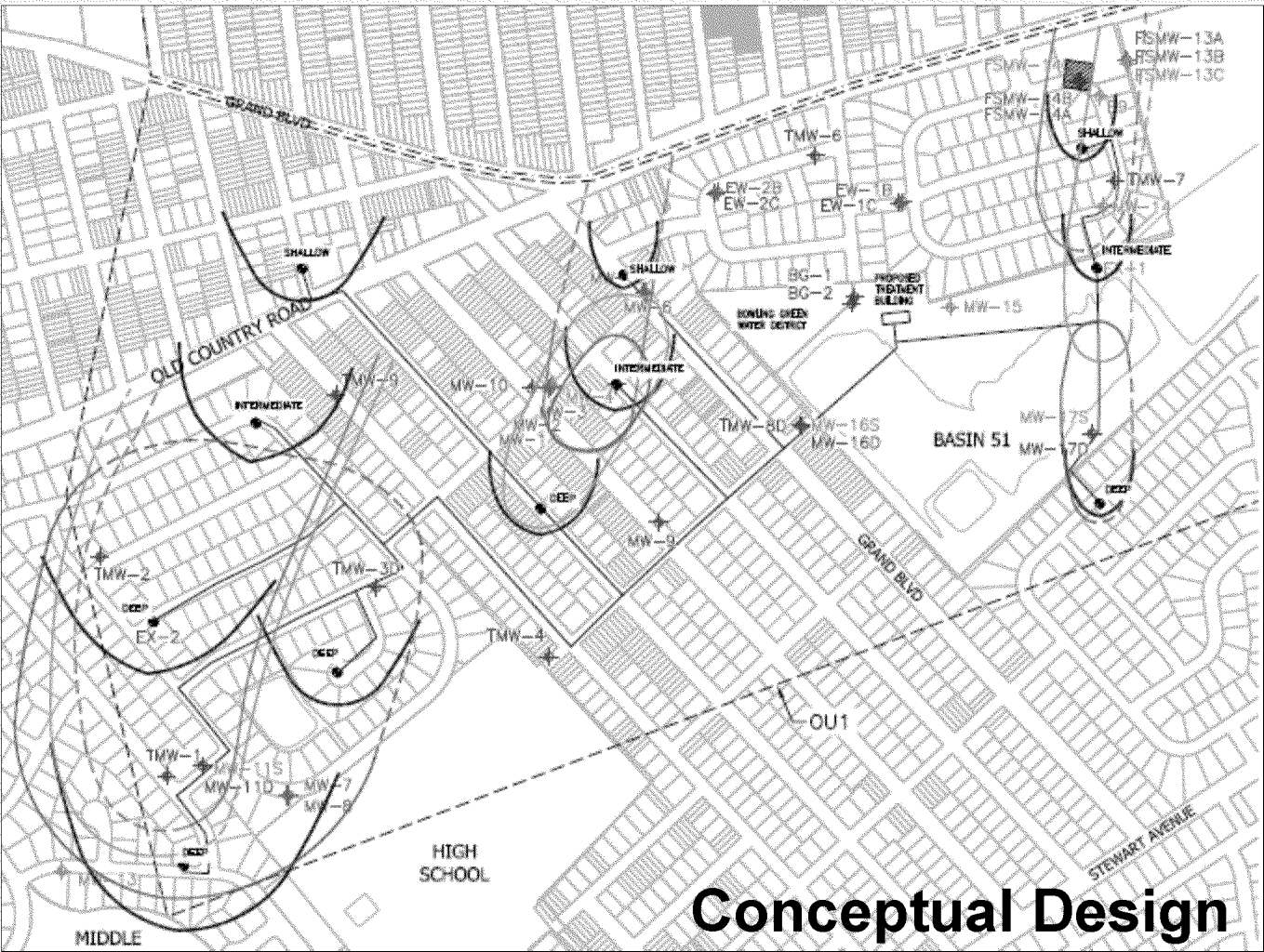


**Treatment Plant at Lawrence Aviation
Superfund Site in Long Island**

- Extraction wells to pump contaminated groundwater
- Treatment of extracted groundwater at on-Site treatment plant facility
- Discharge of treated groundwater
- In-situ chemical treatment



Alternative # 4 – Extraction and Treatment; In-situ Chemical Treatment



- Legend**
- < 175 FEET BGS
 - 175 - 250 FEET BGS
 - > 250 FEET BGS
 - 100 PPB (UG/L) CVOCs ISO CONCENTRATION CENTER AT 150 FEET BGS (DASHED WHERE INFERRED)
 - 100 PPB (UG/L) CVOCs ISO CONCENTRATION CENTER AT 200 FEET BGS (DASHED WHERE INFERRED)
 - 100 PPB (UG/L) CVOCs ISO CONCENTRATION CENTER AT 285 FEET BGS (DASHED WHERE INFERRED)
 - PROPOSED AIR LINE
 - PROPOSED TREATMENT BUILDING
 - PROPOSED GROUNDWATER TRANSMISSION LINE
 - PROPOSED AREA FOR ISCO
 - EXTRACTION WELL AND CAPTURE ZONE - PUMPED AT 100 GPM
 - EXTRACTION WELL AND CAPTURE ZONE - PUMPED AT 80 GPM
 - EXTRACTION WELL AND CAPTURE ZONE - PUMPED AT 60 GPM
 - EXTRACTION WELL AND CAPTURE ZONE - PUMPED AT 50 GPM
 - EXTRACTION WELL AND CAPTURE ZONE - PUMPED AT 40 GPM
 - EXTRACTION WELL AND CAPTURE ZONE - PUMPED AT 20 GPM

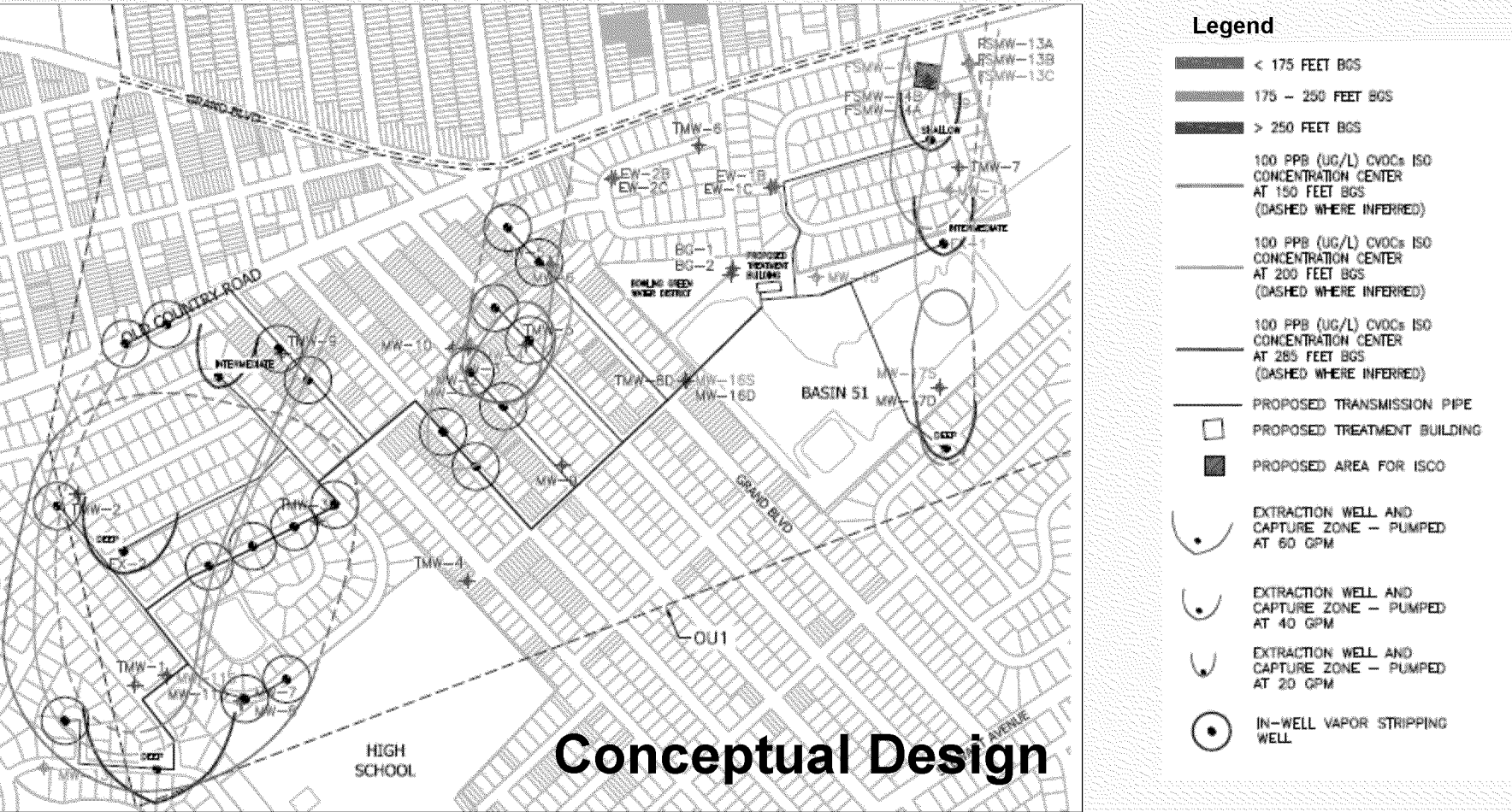


Alternative # 5 Hybrid – In-well Vapor Stripping/Extraction and Treatment; In-situ Chemical Treatment

- Extraction of contaminated groundwater via pumping wells and on-Site treatment prior to discharge
- In-situ treatment of groundwater via in-well vapor stripping system and on-Site treatment of vapor-phase contamination
- In-situ chemical treatment



Alternative # 5 Hybrid – In-well Vapor Stripping/Extraction and Treatment; In-situ Chemical Treatment





Remedial Alternatives Cost Analysis

Alternative	Capital Cost	Annual Operation & Maintenance	Present Worth Cost
# 1 – No Further Action	\$0	\$0	\$0
# 2 – Monitored Natural Attenuation	\$614,000	\$115,000	\$3,300,000
# 3 – In-well Vapor Stripping; In-situ Chemical Treatment	\$11,727, 000	\$652,000	\$24,000,000
# 4 – Extraction and Treatment; In-situ Chemical Treatment	\$8,862,000	\$834,000	\$24,200,000
# 5 - Hybrid – In-well Vapor Stripping/Extraction and Treatment; In-situ Chemical Treatment	\$10,044,000	\$680,000	\$22,900,000



EPA's Nine Criteria for Selecting Cleanup Plans

- To address federal Superfund requirements.
- To address any additional **technical** and **policy considerations** that have proven to be important for selecting among remedial alternatives (cleanup options).



Threshold Criteria

1. Overall Protection of Human Health and the Environment.
2. Compliance with Applicable or Relevant and Appropriate Requirements.



Balancing Criteria

3. Long-Term Effectiveness and Permanence
4. Reduction in Toxicity, Mobility or Volume through Treatment
5. Short Term Effectiveness
6. Implementability
7. Cost



Modifying Criteria

8. State Acceptance
9. Community Acceptance - acceptance of preferred alternative will be assessed following the public comment period.



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Preferred Remedy - Alternative 5

- In-well Vapor Stripping and treatment of vapor-phase contamination at an on-Site treatment plant
- Extraction of Groundwater via pumping and treatment of extracted groundwater at an on-Site treatment plant prior to discharge
- In-situ Chemical Treatment
- Long-Term monitoring
 - Water Quality Investigations
 - Soil Vapor Intrusion Pathway Investigations
- Institutional Controls



Questions and Answers

Please address written comments no later than
Monday, August 26, 2013 to:

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New York, NY 10007-1866
Phone: (212) 637-4328
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Thank you

www.epa.gov/region02/superfund/npl/newcassel